National Park Service,
Yellowstone Park,
Wyoming.

ANNUAL REPORT OF

THE SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK

TO THE SECRETARY OF THE INTERIOR

1907

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1907

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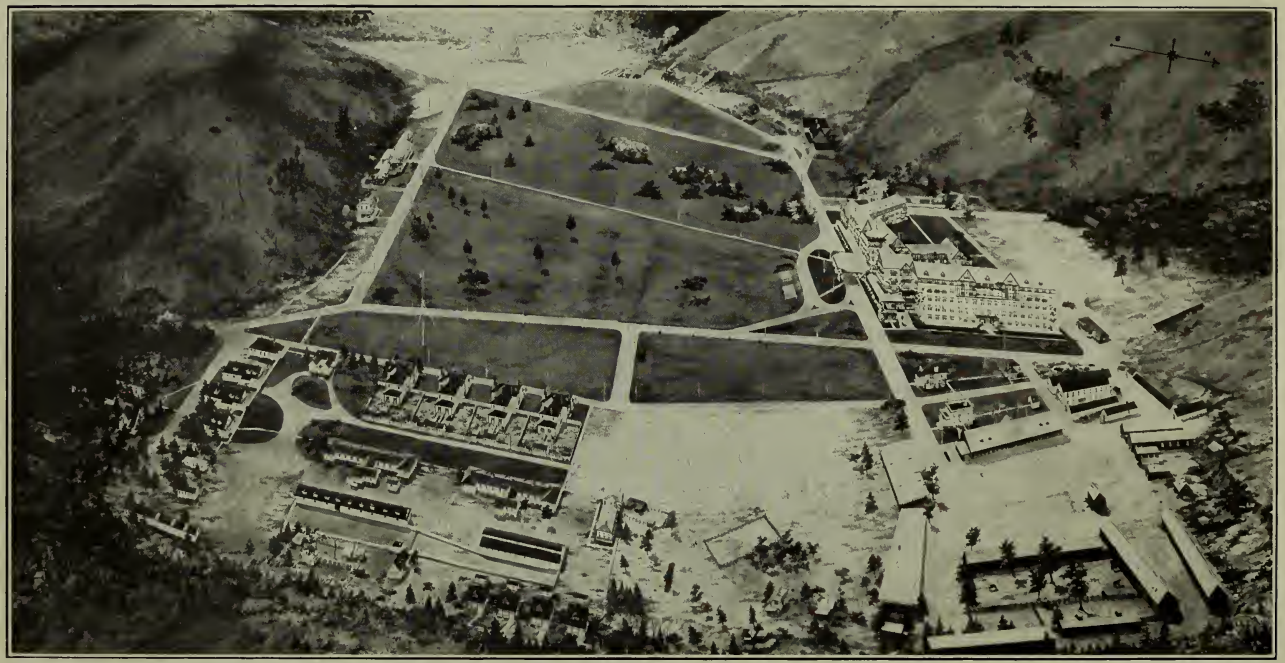

PHOTOGRAPH OF A SKETCH OF GROUNDS AT MAMMOTH HOT SPRINGS.

Fort Yellowstone is shown in the left foreground; Mammoth Springs Hotel, including proposed additions, is shown to the right of the center.

ANNUAL REPORT OF THE SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

OFFICE OF SUPERINTENDENT,
Yellowstone Park, Wyo., October 15, 1907.

SIR: I have the honor to submit the following report of conditions in the park:

GENERAL CONDITIONS.

In June, 1907, before travel in the park commenced, a thorough inspection of hotels, barns, stables, coaches, surreys, horses, harness, etc., was made, and everything was found in excellent condition. All vehicles were in good repair and freshly painted, harness was oiled and polished, and everything presented a neat and attractive appearance, excepting here and there on the grounds surrounding the barns and stables throughout the park were found masses of manure, rubbish, waste material, tin cans, and dump from hotels that had been accumulating for years. Most of these unsightly conditions have been remedied and all will be completely remedied before the opening of next season.

The grounds around the permanent camp sites and temporary stables were not pleasing. There seemed to be much accumulation of rubbish, waste, tin cans, bottles, and cast-off clothing. Some remedial measures were applied before reoccupation for the season, and the conditions were gradually bettered during the season. I have received promise that all will be completely remedied before again occupied. The service rendered the public was excellent and fully enjoyed by a large number of tourists.

Other camping grounds used by licensees who conduct camping parties and by parties owning their own transportation, especially the freighters' camps, were littered with every kind of camp waste, rubbish, tin cans, bottles, pieces of grain sacks, worn-out clothing, and other litter. These offensive sights were remedied as soon as possible. Pits were dug for camp refuse and instructions posted, and daily patrols during the camping season prevented in a great measure a recurring of these offensive and unsightly conditions.

In the corrals of the Yellowstone Lake Boat Company, where buffalo, elk, and sheep were confined during the long previous winter, the conditions were found filthy, inhumane, and disgusting, and were made the subject of a special report to the Department. These corrals were cleaned as soon as possible, and the buffalo and elk were removed to corrals on Dot Island and kept there in confinement as an attraction to induce tourists to take the boat trip. Numerous complaints were made criticising the superintendent for permitting these native wild animals to be kept in captivity in the park. The president of the Lake Boat Company was advised verbally at commencement of season that the Department would no longer permit

wild animals to be kept in close captivity in the park after the close of the present season. On August 2 he was advised to same effect by letter. On August 7 he was directed to remove his buffalo and elk from the park at close of the visitors' season. He closed up his business and left the park on September 22, having removed these animals from Dot Island back to the same corrals in which they had been confined the previous winter. On September 23 he was requested by letter to inform this office if he intended to remove the buffalo and elk as required, and was advised that there was no desire to turn these animals loose and thereby cause him financial loss. Under date of September 26 he informed this office by letter that he declined to comply with the instructions to remove these animals. On October 15 the corral fences were taken down under my personal supervision, and these animals, 8 buffalo and 7 elk, were released from captivity.

Swan Lake and the surrounding valley drain into Glen Creek, which is the source of the water supply for Fort Yellowstone and Mammoth Hotel, and for sanitary reasons, I was obliged to prohibit camping or grazing in the Swan Lake Valley, to the inconvenience of many campers.

Sometimes rollicking, good-natured parties—men and women, boys and girls—pass through the park and leave the roadsides strewn with wrapping paper, paper boxes, beer bottles, candy boxes, cigarette boxes, newspapers, and other trash. While this can seldom be prevented, it must necessarily be remedied, and if a laborer is hired for one or two days for this purpose he objects to being compelled to wait a month for his pay to come in the form of a check from the Department. It would facilitate matters of police if a small contingent fund in cash were allowed to be kept on hand by the chief clerk in the park to pay for necessary jobs of this character, on the order of the superintendent.

ROADS.

REPAIRS.

As soon as the snow was off the road leading from the north entrance to Mammoth Hot Springs, 2 miles of road was surfaced. On May 1, a crew was put to work on the Cody road, leading through the National Forest to the entrance of Sylvan Pass, on the eastern boundary of the park. The crew commenced at Wapiti and completed the opening through Sylvan Pass to outlet of Yellowstone Lake, a total distance of 62 miles, early in July. This same crew, after having opened the road from Cody, spent the remainder of the summer repairing the road south of the park in the National Forest, running to Dubois, Wyo. The length of this road is approximately 90 miles. The work consisted principally in replacing several bridges and constructing new culverts.

On May 1, crews were established at Beaver Lake, Beryl Spring, Excelsior Geyser, Spring Creek, junction of Lake and Canyon roads, and on lake road 6 miles from Canyon; and a carpenter crew and small general repair crew were placed on the Tower Falls road. These crews were obliged to travel over the deep snows in the very early morning when the crust was frozen strong enough to bear the animals and wagons with the camping outfit, supplies, and tools. The travel was dangerous and men and animals suffered hardships.

The greatest difficulty encountered was between Upper Geyser Basin and Thumb of Yellowstone Lake, there being more snow than for many previous years. This route was made passable on June 12, and the first traffic coach crossed the Continental Divide on June 13. The pull in snow and slush was heavy.

The greatest difficulty in keeping roads in repair was in the canyon between the north entrance at Gardiner and the Mammoth Hot Springs. Two large slides containing upward of 3,000 cubic yards each occurred on this road. They were removed by means of washing the dirt through culverts. During the extreme high water in July several sections of the guard walls on this road were washed out, and great difficulty was encountered in preventing sections of this road from being entirely washed out. Heavy guard walls laid in cement are needed in the Gardiner Canyon at several points—also at the Gibbon Falls, Virginia Cascades, Tower Falls Cliff, and on the Spring Tower Falls road. These walls are now laid in dry stone.

The solid rock encasing the petrified tree near Yanceys was blasted out, leaving the tree 30 feet high and more than 20 feet in circumference. An iron fence with concrete base has been constructed around the tree and a road built connecting it with the main road. Another petrified tree near this one should be fenced, else it will be carried away piecemeal by tourists in a few years.

Sprinkling was begun July 1 and discontinued September 5. Approximately 100 miles of road was sprinkled on the circuit. About 20 miles can not be sprinkled without considerable expenditure of money to install piping.

The mileage of roads to be kept in repair is 111 outside the park and 306 within the park, making a total of 417.

SURVEYS.

In the fall of 1906 survey was made for a new road to connect the canyon with Tower Falls, in order to obviate the high climb through Dunraven Pass. This road goes to an elevation of only 300 feet above the Canyon Hotel, whereas the Dunraven Pass road reaches a point 1,100 feet higher than the hotel. The object of the road is to allow passengers to drive from the canyon to Mammoth Hot Springs in a day without additional expense.

Another survey was made for a road to connect the Gallatin with the circuit near the 7-mile post. A route was surveyed through Bighorn Pass and declared unfavorable. Another route was run up Specimen Creek from the Gallatin, but the survey was discontinued on account of rough country. A third survey was made from the Gallatin up Fan Creek and Stellaris Creek, thence through the pass north of Joseph Peak. This road is also deemed unfavorable, both as regards distance and elevation. The distance from Bozeman outside the park to Gardiner, thence by the main road in the park to the Golden Gate, is 69 miles. The distance between the same points up the Gallatin River via the proposed route is 95 miles.

By a glance at the map it will be seen there are at present four main highways entering the park: On the north, a road from Gardiner follows up the Gardiner Canyon to Mammoth Hot Springs and then runs through Golden Gate to interior of park; on the east, a road from Cody, up the North Fork Shoshone River, enters the park at Middle Creek, thence runs through Sylvan Pass to the interior at

Yellowstone Lake outlet; on the south, a road from Dubois, up Snake River, via Jackson Lake, enters the park at Lewis River, thence runs north to the interior at West Thumb of Lake Yellowstone; on the west, a road follows Madison River to the interior at the junction of Gibbon and Firehole rivers. There is a road from Cooke, at the northeast corner of park, down Soda Butte Creek and Lamar River, thence via Mammoth to Gardiner. This is the only outlet or inlet to Cooke by wheel transportation, and was originally the trail leading from Gardiner to Cooke traveled by prospectors and exploiters.

The proposed road to connect the Gallatin Valley with the circuit road near the Golden Gate does not meet with my approval.

IMPROVEMENTS.

Twenty rams for pumping water into tanks were installed during the year. Also 10 new tanks were constructed, into which water is conveyed by piping.

The bridge at Sulphur Creek was replaced by a 3-foot culvert and an earthen fill 180 feet long. Two other bridges, 2½ miles from the canyon on Lake road, were replaced by tile and earth fill.

Three houses were built on the Upper Basin road for use of crews, particularly for the snow crews in opening the roads. Upward of 14 miles on this road must be broken through each year and deep snow the entire width of wagon has to be shoveled out. Stables for shelter of animals and forage were also built near these houses.

Permanent camps were made at Beaver Lake, Beryl Spring, Excelsior Geyser, Upper Basin, Thumb, near Lake Hotel, Trout Creek (between Lake and Canyon), and at Canyon. These camps consist of tent floors, side walls, and frame for canvas. Mangers and feed boxes were built for these camps.

Platforms for accommodation of tourists getting out of coaches were built at Norris, Mud Geyser, Upper Yellowstone Falls, Inspiration Point, and at the Great Falls and Kepplers Cascade; stairways were built in connection with the two latter. Many toilet houses were constructed throughout the park bordering on the main roads, and on summit of Mount Washburn, where also railings were put up for securing saddle horses of visitors. All stairways and platforms throughout the park were stained to harmonize with the surroundings.

About 600 new signs, made of enameled steel, were placed throughout the park on iron stakes set in cement. These signs were to replace the many signs made of wood which had previously been set up throughout the park.

All road and construction work was carried on under the direction of Lieut. E. D. Peek, U. S. Engineers, and was performed in a most satisfactory manner.

Under the direction of the commanding officer of the troops at Fort Yellowstone a new cabin and stable for the park guard at junction of Tower Falls road with Cooke road was constructed. The old cabin at Tower Falls station became uninhabitable and was too distant from the junction. It will be destroyed.

The Monida and Yellowstone Stage Company completed the construction of a coach house 48 by 128 feet, Montana dressed lumber and shingle roof; also a superintendent's cabin 16 by 40 feet, with an addition of 16 by 16 feet, peeled logs on stone foundation and shingled roof, with a false roof for warmth. The following buildings

are under construction, to be completed in November: Office building 16 by 32 feet; employees' mess house, 16 by 60 feet; club and lodging house, two stories, 24 by 72 feet, with bathrooms; harness and storehouse, 16 by 48 feet, with addition 16 by 24 feet; grain house, 16 by 60 feet; hay barn, 24 by 100 feet; horse stable, 24 by 240 feet; blacksmith shop, 24 by 48 feet; coach washhouse, 20 by 36 feet. All buildings will have cedar shingle roof and stone foundations, and roof and sides will be painted mineral red, with black trimmings. These buildings are clumped on bench, west bank of the Madison River 1¼ miles from the railway terminal at the west side entrance, ½ mile north of the main road, and not in view.

TRANSPORTATION FACILITIES.

The Yellowstone National Park Transportation Company has in barns 4 six-horse tallyho Concord coaches of 33 seats capacity, 90 four-horse Concord coaches of 7 and 11 seats capacity, and 102 Glens Falls two-horse surreys of 3 and 5 seats capacity. It is prepared to receive and move from the terminus of the park branch of the Northern Pacific Railroad at northern entrance 150 passengers daily throughout the season, in addition to lay-overs.

The Monida and Yellowstone Stage Company has in barns 28 eleven-passenger Concord coaches, 6 eight-passenger Concord coaches, 8 five-passenger Glens Falls surreys, and 8 three-passenger Glens Falls surreys. It is prepared to receive and move from the terminus of the park branch of the Oregon Short Line Railroad, at western entrance, 75 passengers daily throughout the season, in addition to lay-overs.

The Wylie Permanent Camping Company has a large number of Concord and other vehicles, numbering over 50 in all, at Gardiner, and is prepared to receive and transport all parties who may desire to stop at its camps, from both north and west entrances.

The persons who annually apply for license to carry parties who desire to travel with movable camps are numerous, and can accommodate all who desire to travel in that manner.

Saddle horses may be had at Mammoth, Old Faithful, Lake, and Canyon.

TRAVEL.

The aggregate number of persons carried through the park over the regular route during the season of 1907 was as follows:

Persons carried through the park during the season of 1907.

Yellowstone National Park Transportation Company, entering via northern entrance	6,282	
Monida and Yellowstone Stage Company, entering via western entrance	2,270	
Total, regular companies		8,552
Wylie Permanent Camping Company, including persons accommodated at its permanent camps	2,146	
Other licenses of personally conducted camping parties	1,402	
Total number camping, traveling with licensed transportation		3,548
Total making trip with private transportation as "camping parties"		4,314
Grand total of visitors making tour of park, season 1907		16,414

The Yellowstone Park Association accommodated 9,389 tourists at its hotels during the season. The discrepancy in the numbers stopping at the hotels and the numbers carried by both transportation companies (all of whom stopped at the hotels) is accounted for in part by army officers and their families who visited Fort Yellowstone and were carried around the park in United States quartermaster transportation, and in part by visitors making only a partial trip in the park and spending a week or two at different hotels.

During the season 5,275 tourists took the trip across the Yellowstone Lake with the Yellowstone Lake Boat Company. Of this number 2,303 entered the park with the Yellowstone National Park Transportation Company, 516 with the Monida and Yellowstone Stage Company, 2,140 with the Wylie Permanent Camping Company, and the balance, 316 people, were campers.

In compliance with an order from the Department, the Wylie Permanent Camping Company established a tent station near the western entrance of the park at the beginning of the tourist season, for the accommodation of any tourists who might enter the park from that direction and desire to be accommodated at their camps. There has been no demand for accommodations at this camp by tourists entering from the western entrance, and none were received from that side of the park during the season.

Travel by the different roads leading into the park was as follows:

Travel by the different entrances.

By the main gate entrance on the north, Gardiner station	11,292
By the Cooke road, northeast corner, Soda Butte station	8
By the Government road from Cody on the east, Sylvan Pass station	545
By the road leading from Jackson Hole on the south, Snake River station	419
By the Madison River road on the west, Riverside station	4,150
Total	16,414

With reference to the western entrance, Mr. W. H. Bancroft, general manager Oregon Short Line Railroad, has kindly furnished me the following information:

Yellowstone Park Railroad was incorporated September 12, 1905, for the construction of a line of railroad from St. Anthony, Idaho, northerly to the Madison River entrance of the Yellowstone National Park, a distance of about 70 miles. Construction work commenced in October, 1905, and line opened for traffic between St. Anthony and Marysville, 16.4 miles, June 15, 1906. During 1906 and 1907 track was laid to mile No. 56, and we expect to complete the line by the middle of November, this year.

This will undoubtedly increase the tourist travel in the park in 1908, especially by the western entrance. The terminal station will be on the park boundary, and many people are already asking for leases on the national forest bordering on the park boundary. It therefore becomes necessary to construct about 5 miles of fence on that boundary, from the Madison River south to the mountainous bluffs, in order to prevent encroachment on the park grounds similar to that now at Gardiner, where the front street and portions of a row of buildings (stores and residences) are on park grounds, having been placed there before the present fence was constructed. The cost of erecting 4½ miles of No. 8 Montana anchor fencing at northern entrance in 1903 was $432.74 per mile, or $1,947.33. The 5 miles of

necessary fence (material and construction) would cost $2,163.70. This does not include cost of gate and gateway which should be an ornamental structure of iron. Special estimate for this work has been submitted.

HOTELS.

The hotels, all under one management, superintended by Mr. T. E. Farrow, were exceptionally well provided and well kept. The food was excellent, well cooked, and well served.

In order to avoid congestion at hotels, liable to be caused by large parties entering by the park branch of the Oregon Short Line Railroad from the west, on the Monida and Yellowstone stage coaches, and large parties entering by the park branch of Northern Pacific Railway from the north on Yellowstone Park Transportation Company's coaches, the route and meals and lodgings taken by any party are marked on a special chart by the hotel company and the railroad passenger agents. A set of these charts (for June, July, August, and September) is kept in office of the general passenger agent of the Northern Pacific Railway at St. Paul, and another set is kept in office of the general passenger agent of the Oregon Short Line Railroad in Salt Lake City. Large parties always plan in advance for accommodations over railroads and in the park. When a party books for a date to arrive at north entrance, the Northern Pacific agent charts it and wires hotel company, hotel company charts it and wires Oregon Short Line agent who charts it. And vice versa, when a party books for a date to arrive at western entrance. It is understood that the railroads will not book two large parties for same day.

FIRES.

We are indebted to the frequent rains for our good fortune in having no disastrous fires, and also to the constant daily patrols. The old road slashings and all dead timber should be removed from either side of the roads for a distance of 150 feet; $30,000 has been asked for this purpose in my annual estimate for 1909.

The following circular on this subject has been published:

> Hereafter within the boundaries of this park, whenever a tree—dead or alive—is felled for telegraph or telephone construction, trailway, roadway, or any right of way, for fuel, for building, bridging, or for any purpose whatever, the brush and tops must be lopped and piled in a cleared space, and—if conditions are favorable for burning without danger of the fire spreading—will be burned.

There have been few fires in the park this season, and all with one exception were discovered and extinguished by scouts, patrols, or workmen in the road crews before they became dangerous. One on Madison River, a few miles below its formation by the Gibbon and Firehole, caused considerable anxiety for two days and one night before complete control was accomplished. Lieutenant Andrews with guards gathered by telephone from Riverside, Norris, and the Great Geyser basins worked unceasingly and with determined energy and good judgment for twenty-seven continuous hours in gaining control. This fire was evidently caused by the carelessness of some one in dropping a lighted match, cigar or cigarette stub into the fire trap made by the slashing and clearing the timber for the roadway.

The area covered by this fire was about 12 acres. Others were caused by smoldering bits of wood left by campers who had, as they thought, extinguished their fires. Others were left by tramps and hobos, without making any attempt to extinguish them.

FISH.

The following plants of brook trout (*Salvelinus fontanalis*) were made during the season: May 30, Indian Creek, 34,000; May 31, Willow Creek, 35,000; June 1, Glen Creek, 30,000.

Mr. D. C. Booth, superintendent of hatchery, Spearfish, S. Dak., opened the fish hatchery near the West Thumb on Yellowstone Lake on June 5, and soon after began the active work of collecting and hatching eggs of the black-spotted trout. The operations were continued until July 30. During this period—say fifty days—2,660,000 (*Salmo clarkii*) eggs were collected. As the eggs became developed sufficiently for shipping, the following consignments were made:

July 21, 1907. Superintendent fishing station, Bozeman, Mont	504,000
July 26, 1907. State Fish Commission, Mount Pleasant, Pa	126,000
July 26, 1907. Wyoming Fish Commission, Sheridan, Wyo	63,000
July 26, 1907. Eaton Brothers, Sheridan, Wyo	63,000
July 26, 1907. Spearfish Station, S. Dak	894,000
In tributary streams Yellowstone Lake, during season (black-spotted fry)	400,000
Total	2,050,000

The water in Yellowstone Lake was higher than at any period since the inception of fish culture in 1900, and rendered the collection of trout very difficult. Many fish have been taken by tourists and other visitors during the season, and the waters of Yellowstone River at the lake outlet seem to have an inexhaustible supply.

Glen Creek, from its source to its mouth, was daily whipped by fishermen until it became necessary to prohibit fishing in its waters during the remainder of the season, as the large majority caught after August 1 were under size and were thrown back more or less injured.

Sportsman Lake, in northwest corner of park, shows evidence that fish have been taken otherwise than by hook and line, and fishing has been prohibited in its waters for the present.

A shipment of 15,000 rainbow trout to be planted in a tributary of Yellowstone Lake, and also of land-locked salmon to be planted in Shoshone Lake, are promised for the autumn.

ANIMALS AND BIRDS.

Only such species of animals and birds as were found in the park when originally laid out and set aside exist here to-day. With intelligent management and comparatively little expense a greater variety of birds and animals could be successfully added and propagated within the park, and under the protection of a specially trained body of scouts such animals as buffalo, that have been exterminated, and mountain sheep and antelope, that are rapidly being exterminated in the United States outside the park, will undoubtedly increase in the park. Under wise protective game laws, justly and strictly administered in the neighboring States, the overflow from

the park herds will in due time restore some of the progeny to the former near-by haunts of their kind.

Unfortunately the law permits the killing of one antelope in Montana by any licensed hunter. A few of the park antelope have wandered out during the past two weeks through the streets of Gardiner, where even the dogs respect and do not chase them, and have been slaughtered by hunters in Montana. The word "slaughtered" is used advisedly, for these innocent and beautiful creatures are tame as domestic sheep. If this law remains in force, the Montana antelope will be exterminated in a few years, and the work of protecting those in the park will become more and more difficult. In my report as acting superintendent for 1897 it was estimated that a band of 500 antelope wintered in the valley of the Gardiner and on the slopes of Mount Everts. In the annual report of the acting superintendent for 1905 it is stated that about 1,150 antelope were seen and counted by scouts and by the guards at Gardiner Station. In report of the same acting superintendent for 1906 the number is estimated at about 1,500. From all information gathered I can not now place the estimate much above that for 1906—although in the scattered herds seen during three trips through the summer habitats of the antelope there seemed to be a fair number of fawns. Four full-grown antelope have been killed by coyotes on the Gardiner and Yellowstone flats since October 1, and it is reported that many fawns were destroyed by coyotes during the season. A remnant, eight in all, of a former large herd on the western boundary line in the Madison Valley were reported on that line during the summer. Other small bands are reported in Pelican Valley, Hayden Valley, and on meadows bordering the Yellowstone between the Lake and Upper Falls. With these and the year's crop of fawns there may be approximately 2,000 antelope in the park. There is a good supply of hay on the Gardiner flat for feeding the antelope, sheep, deer, and elk during the deep snows of the coming winter. Practically all the antelope in the park herd on the Gardiner flat and the surrounding draws and slopes.

The young antelope captured in June, intended for the zoological garden in London, were raised on the bottle and are now being fed on rolled oats. They will be ready for shipment about the middle or last of December. A pair of elk, male and female, captured in June, have also been successfully raised on the bottle and rolled oats. They will be shipped in December for the park in Vancouver, British Columbia.

The number of elk in the park is estimated by persons of some experience at 40,000. From personal observation and information received from reliable scouts, also the daily reports of patrols and guards, 25,000 seems to be a safe estimate.

Mountain sheep, whitetail and blacktail deer are increasing in numbers and growing less wild. Mr. McBride, the chief (and the oldest) scout, gives the following estimate on numbers of these animals in the park: Mountain sheep, 200; whitetail deer, 100; blacktail deer, 1,000.

The 29 buffalo in the fenced pasture near Mammoth produced only 5 calves. One old cow in this herd died in June. The calves are hardy. This herd, with the exception of the two original old bulls, was safely conducted to the Lamar Valley on October 12 and

13, where there is superior grazing, and where they will be herded during the daytime in fair weather and secured in the 600-acre pasture field during the nighttime and in foul weather. The grazing in the Mammoth pasture has not been excellent, and it has been necessary to feed hay to this herd all summer. The 28 buffalo taken to the Lamar Valley in May last have not been fed hay and are in better condition than the Mammoth herd. The Lamar herd produced no calves. The united herd numbers 59 (25 males and 34 females), not including the 2 old bulls which have been advertised for sale. Of the original wild buffalo in the park signs of 6 are reported on the Madison Plateau, southwest corner of park; 4 were reported seen in Hayden Valley, their old habitat, in August, and signs of 15 are reported on Mirror Plateau and Specimen Ridge, 10 miles south of Soda Butte. Total number estimated to be 25.

Moose seem to have increased. The greatest number appear to be in the marshes and willows of the Upper Yellowstone, in the southeast corner of park, others are in the southwest corner on Bechler River, and a few in Gallatin Basin, in the northwest corner of park.

There are many bear in the park. It was necessary to kill 1 black and 2 grizzlies that became very dangerous this season. The black and 1 grizzly were burned after being killed; 1 grizzly was skinned. The skin and skull will be sent to the National Museum when cured sufficiently for shipment.

The mountain lions have been almost exterminated. The tracks of only one in the snow was reported last winter, and again during the summer in the same region. The records show that 62 of these animals were destroyed during the winters 1903–4, 1904–5, and 1905–6. None were destroyed during the winter 1906–7.

Coyotes are numerous and very destructive to the antelope, young and old. The records show that 99 have been destroyed during the past year by the scouts and station guards. The majority of this number were trapped, some were poisoned, and others shot.

Foxes, badgers, marmots, the Fremont tree squirrels, and three varieties of chipmunks are plentiful. Beaver are abundant throughout the park. Martin, mink, otter, and muskrats are plentiful.

Of rabbits we have the common hare, jack rabbit, Rocky Mountain hare (snowshoe rabbit), and chief hare (pika). The two latter are plentiful.

Eighteen beaver were taken without injury and shipped to Old Forge for the forest, fish, and game commission of New York.

Large numbers of the Canada geese have reared their young in the park this season and showed little fear of molestation by visitors. Also ducks of many varieties, not including canvasbacks. Pelicans and gulls occupy the entire surface of one small island in Yellowstone Lake as their nursery. More than 70 species of birds come to the park to rear their young, but many of the song birds and others that generally nest near the human habitations are annually destroyed by the house cats. For this reason cats as well as dogs will not hereafter be permitted in the park.

I am much indebted to Dr. T. S. Palmer, of the Biological Survey, in charge of game preservation, Agricultural Department, who spent some days in the park during this season and on my request kindly prepared the following:

NOTES ON THE SUMMER BIRDS OF THE YELLOWSTONE NATIONAL PARK.

By T. S. Palmer.

Visitors to the Yellowstone National Park are apt to gain the impression that birds are few both in number of species and individuals. Their attention is only occasionally directed to the birds along the route and is absorbed by the geysers, hot springs, and other objects of interest which constantly excite their wonder and admiration. Moreover, tourists who take the regular trip via the Mammoth Hot Springs, Norris Basin, Fountain Hotel, Upper Geyser Basin, Yellowstone Lake, and the Canyon, stopping each night at one of the hotels of the Yellowstone Park Association, or who follow the same general route under the guidance of the Wylie Permanent Camping Company, find the programme for each day already planned and the time too short to see even the chief points of interest. Five or six days or two weeks are entirely inadequate for gaining a general acquaintance with the fauna of a region comprising more than 3,000 square miles, greater in area than the States of Delaware and Rhode Island, and approximately one-tenth the size of the State of Maine. The brief stops at the hotels or camps and the long rides through the extensive forests on the plateau of the park, where conditions are not favorable for variety of bird life, also afford insufficient opportunities for making many observations.

The more conspicuous species ordinarily seen by the tourist are included to a certain extent in a list of the names of birds which have been used to designate certain points of geographic interest. Such names are: Crow Creek, Duck Creek and Lake, Eagle Peak, Falcon Creek, Goose Lake, Grebe Lake, Grouse Creek, Jay Creek, Loon Lake, Mallard Lake, Magpie Creek, Owl Creek, Osprey Falls, Ouzel Falls, Pelican Cone, Creek, and Valley, Raven Creek, and Tern Lake. A little search, however, will bring to light a number of other less conspicuous but not less interesting birds, and fifty or more species can readily be found along the regular tourist route.

Unusually favorable opportunities are afforded for observing certain phases of bird life. Especially is this true of the raptorial birds, such as the eagles, hawks, and owls, represented by 9 or 10 species, which, under the rigid protection accorded them, may be seen in greater numbers and at closer range than in most parts of the country. Unrivalled opportunities are afforded for studying the nesting and feeding habits of the osprey or fish hawk in the canyons of the Gardiner and Yellowstone rivers. Marsh hawks, sparrow hawks, and the other species may also be observed at numerous points along the route. The destruction of the smaller birds which find shelter in the Stygian and other caves on the "Formation" back of Mammoth Hot Springs furnishes a means of noting in a general way the progress of the migration, and a visit to these caves will usually be rewarded by finding one or more species which have sought shelter in the crevices of the rock during cold nights and have been overcome by the gases. Dr. Edgar A. Mearns, U. S. Army, who was stationed at Fort Yellowstone in 1902, has published an interesting article under the title "Feathers beside the Styx"[a] in which he enumerates

[a] Condor, Vol. V, pp. 36–38, Mar., 1903.

the species which he found in these caves. Following is a list of 16 species which he found dead in the Stygian caves from April to December, 1902:

Blackbilled magpie.	Audubon warbler.
Clarke nutcracker.	Macgillivray warbler.
Cassin purple finch.	Rocky Mountain creeper.
Pine siskin.	Rocky Mountain nuthatch.
Pink-sided junco.	Red-breasted nuthatch.
Green-tailed towhee.	Mountain chickadee.
Louisiana tanager.	Townsend solitaire.
Western warbling vireo.	Western robin.

The number of birds occasionally found in these caves, especially during migration, is surprising. On August 1, 1902, Doctor Mearns found 11 birds in the Stygian Cave, including 2 pine siskins, 4 pink-sided juncos, 2 warbling vireos, 2 Louisiana tanagers, and 1 mountain chickadee. On October 15, 1902, he reported 58 birds found in twenty caves. That these figures are not exceptional is shown by the fact that during our visit on September 12, 1907, 11 birds were found in the Stygian Cave and 21 in an adjoining cave. Those in the Stygian Cave comprised 1 flycatcher, 2 juncos, 1 sparrow, 2 pine siskins, 1 tanager, 1 Wilson warbler, 2 red-breasted nuthatches, and 1 thrush. The species found in the other cave comprised 1 Clarke nutcracker, 1 sparrow, 14 juncos, 2 cassin purple finches, 1 red-breasted nuthatch, 1 thrush, and 1 undertermined species. Doctor Mearns states:

> Although unable to estimate the number of birds that perished in the caves adjacent to the Mammoth Hot Springs during the past season (1902), I am of the opinion that the number reached into the hundreds, if not thousands. Birds were found dead in about thirty different caves and hollows about the "Formation" between Snow Pass and the Mammoth Hot Springs hotel, near which latter the lowest bird cave was discovered.

This unnecessary destruction of bird life can readily be avoided, as suggested by Doctor Mearns, by covering the entrances of the caves with wire netting and thus preventing the birds from entering only to meet with sudden death. Another source of bird destruction, although not great in the aggregate, is unfortunate from the fact that it occurs about the hotels and permanent camps where it is especially desirable to increase the number of birds as much as possible. This destruction is caused by the cats which are kept at nearly every hotel, permanent camp, and soldier station, and which are continually preying on the small birds in the vicinity. The number of birds thus destroyed can not of course be accurately estimated, but a little observation will suffice to show that it is by no means inconsiderable. Prohibiting the keeping of cats in the park will undoubtedly increase the abundance of bird life at points most frequented by tourists. It is also possible to increase the numbers of a few species, such as bluebirds and wrens, by putting up suitable nesting boxes about the hotels and camps, and in some places where fresh water is scarce, to attract other species by providing shallow pans of water where the birds can bathe or drink.

The following list is not in any sense a catalogue of the birds of the park. It contains only a small proportion of the species which occur in this region, but it includes about seventy of the more conspicuous ones and most of those that are apt to be found along the regular tourist route in August and September. The notes on which it is

based were made during a three weeks' visit, but with no thought at the time of preparing them for publication. Other duties demanded most of my attention and consequently I made no special effort to extend the list or to search for certain species which are probably common but which were not observed immediately along the route. The regulations prohibiting shooting in the park prevented the collection of specimens, and under these circumstances it was impossible to identify some of the species. Such species are marked with an interrogation point.

My visit comprised in all twenty-one days, August 7 to 21, and September 9 to 14, 1907. In August I made the regular five-day tour of the park and, on returning to Mammoth Hot Springs, I was invited by the superintendent, Gen. S. B. M. Young, to accompany him on a trip to Soda Butte. Through his courtesy an opportunity was thus afforded of visiting, under very favorable circumstances, the Lamar Valley, the lower end of the Yellowstone Canyon, and the region about Camp Roosevelt—all in the northeastern part of the park. The rest of the time, including the week in September, was spent at Mammoth Hot Springs and Fort Yellowstone. In August some species were already preparing to migrate, and in September many of those which were most conspicuous about Fort Yellowstone during my first visit had left for the south. Most of the notes were based on my own observations, but I am indebted for information regarding several species to Maj. Wirt Robinson, of West Point, who spent a month in the park earlier in the season, and whom I had the pleasure of meeting a day or two before my departure in August. I have also included notes on the species found in the caves by Dr. Edgar A. Mearns, U. S. Army, who was stationed at Fort Yellowstone for several months in 1902.

Pied-billed grebe (*Podilymbus podiceps*).—Apparently rather common. One was seen along the Yellowstone River a few miles below the lake on August 14, and several small grebes were noticed in the marshes at various points along the road but too far away to be identified with certainty. It is probable that the horned grebe (*Colymbus auritus*) and the eared grebe (*Colymbus nigricollis californicus*) occur at certain seasons of the year.

Ring-billed gull (*Larus delawarensis*).—Common about Yellowstone Lake and the outlet of the Yellowstone River. At the Lake Hotel the birds come in to feed on the garbage pile at the same place which forms such an attraction for the bears.

Black tern (*Hydrochelidon nigra surinamensis*).—I did not happen to see this species and am indebted to General Young for information regarding its presence. It is probably common about Yellowstone Lake and some of the streams.

White pelican (*Pelecanus erythrorhynchos*).—The names Pelican Valley, Pelican Cone, Pelican Creek, and Pelican Roost attest the presence of pelicans about Yellowstone Lake. On August 13, while making the trip on the boat from Thumb Station to the Lake Hotel, we observed a small flock of white pelicans on a low point near the south shore at the entrance of the west arm of the lake. The birds seemed to have young with them and were in company with a few gulls. On the same evening and on the following day a few pelicans were seen singly or in pairs or threes along the Yellowstone River

from the outlet to the mouth of Alum Creek. Nowhere were any large flocks seen, nor was there any evidence of the birds breeding in large colonies. In view of the abundance of fish in the lake, furnishing an ample food supply, there is no apparent reason why these pelicans should not be more abundant on the lake, where their presence adds much to the attractiveness of the bird life of this part of the park.

Mallard (*Anas boschas*).—Probably a common species. It was seen at several points along the route and doubtless breeds in some of the marshes and on the low ground in some of the valleys.

Blue-winged teal (*Querquedula discors*).—Six or seven blue-winged teal, evidently migrants, were seen at Soda Butte on August 16. The species is evidently common and may breed in suitable places.

Wood duck (*Aix sponsa*).—I did not meet with this species, but General Young assured me that it was by no means rare and that it was found especially along the Madison River.

Canada goose (*Branta canadensis*).—A common summer resident, breeding in suitable places. On the Yellowstone River a short distance below the outlet of the lake an old goose and nine goslings were noticed on August 14. Canada geese were noticed at several other points and quite a number were seen in the Lamar Valley on August 17.

Great blue heron (*Ardea herodias*).—Probably common. General Young states that he has observed it at Twin Lakes or along the Madison River.

Wilson snipe (*Gallinago delicata*).—Maj. Wirt Robinson, U. S. Army, informed me that he had found this snipe in Swan Lake Valley early in August. I did not meet with it myself.

? Least sandpiper (*Tringa minutilla*).—A number of diminutive sandpipers, evidently belonging to this species, were seen at Soda Butte on August 17.

? Solitary sandpiper (*Helodromas solitarius*).—In the Upper Geyser Basin a family of four birds, two old and two young, were found on August 12. The young birds were still in the down and could run with surprising rapidity.

Spotted sandpiper (*Actitis macularia*).—Seen along the Lamar River. Probably generally distributed and a common breeder along the streams in the park.

Kildeer (*Ægialitis vocifera*).—Common in some places. Noticed at Soda Butte August 16 and at Fort Yellowstone three days later.

Dusky grouse (*Dendragapus obscurus*).—Apparently common, at least in some parts of the park. While returning from Soda Butte with General Young on August 17 the ambulance started four or five young birds close to the roadside in the lower end of Lamar Valley. On the following day I flushed a hen with a young bird on the hillside a few hundred yards behind the Mammoth Hot Springs Hotel, and was able to approach within 30 or 40 feet of them, but in neither case did I see the color of the tail distinctly enough to determine with certainty whether the birds were dusky grouse or Richardson grouse (*Dendragapus obscurus richardsoni*).

Mourning dove (*Zenaidura macroura*).—Doves are by no means uncommon and are likely to be met almost anywhere along the route. They are usually found singly or in twos or threes.

Marsh hawk (*Circus hudsonius*).—One of the commonest hawks in the park. In the marshy sections of the valley or about the pools or smaller lakes it may be seen gracefully beating its way over the sedges and tules in search of food. It was especially common near Beaver Lake and in some parts of the Lamar Valley.

Western red-tail (*Buteo borealis calurus*).—Abundant especially in the Lamar Valley, where a number were seen on August 16 and 17.

Swainson hawk (*Buteo borealis calcurus*).—Like the preceding species, the Swainson hawk is common and generally distributed and is found in much the same places. In the more open sections of the park, such as the Lamar Valley, it is likely to be found in greater numbers than elsewhere.

Golden eagle (*Aquila chrysaetos*).—I did not see the golden eagle in the course of our trip about the park. Both golden and bald eagles are said to be permanent residents and not uncommon.

Bald eagle (*Haliæetus leucocephalus*).—The only specimen seen was a young bird caught in the park in a trap set for coyotes, and kept in captivity at the buffalo corral near Mammoth Hot Springs until its injuries were healed, when it was set at liberty. The birds commonly pointed out to tourists as bald eagles are in reality fish-hawks, which are very numerous at several points along the route.

? Duck hawk (*Falco peregrinus anatum*).—On August 12 two hawks, supposed to be duck hawks, were seen flying high above the road in Upper Geyser Basin about midway between Old Faithful Inn and Biscuit Basin.

Pigeon hawk (*Falco columbarius*).—In Tower Falls Canyon and in the adjacent portion of the lower canyon of the Yellowstone several hawks were seen on the afternoon of August 17. These birds evidently belonged to this species, but were too far away to be identified with certainty. The pigeon hawk is probably not rare in this region and may be looked for in almost any part of the park.

Desert sparrow hawk (*Falco sparverius deserticolus*).—The little sparrow hawk is one of the commonest and most generally distributed of the raptorial birds and may be seen almost anywhere in the park darting gracefully from a telegraph pole or winging its way along the road in its search for food.

Fishhawk (*Pandion haliaetus carolinensis*).—As the road begins to enter the canyon of the Gardiner River, a short distance from the gateway of the park, the visitor catches his first glimpse of a fish-hawk's nest, perched on a pinnacle high above the stage road. This nest is frequently photographed and commonly known as the "Eagle's nest." Careful observation of the old birds soon shows, however, that the occupants of the nest are fishhawks instead of bald eagles. On August 7 the nest was occupied, but on September 14, when I left the park, neither old nor young birds could be seen near it.

The abundance of fish in the Gardiner and Yellowstone rivers makes the park a paradise for fishhawks and the pinnacles in some of the canyons form ideal nesting sites for the birds. In the Grand Canyon of the Yellowstone, only a short distance below the falls, four nests, each occupied by one or two young birds, were observed on August 14. A stiff breeze was blowing down the canyon at the time and it was interesting to see each of the young birds facing the wind, but sitting on the rim of the nest opposite the breeze, and thus enjoying some protection even in their exposed positions. The old

birds soaring above the canyon or darting suddenly into its depths to snatch a fish from the water formed a picture not soon to be forgotten.

Western horned owl (*Bubo virginianus pallescens*).—Probably a common resident, but seen on only one occasion, on August 13, near the bridge over the Yellowstone River a short distance below the outlet of Yellowstone Lake.

Belted kingfisher (*Ceryle alcyon*).—Common and generally distributed. Like the fishhawk, the kingfisher finds an ideal home along the rivers, where the fish are abundant.

Rocky Mountain hairy woodpecker (*Dryobates villosus monticola*).—Probably a common species, but the few glimpses I had of woodpeckers were insufficient to determine the birds with any certainty.

Red shafted flicker (*Colaptes cafer collaris*).—A common bird about Fort Yellowstone and at various points about the park.

Western night hawk (*Chordeiles virginianus henryi*).—Among the conspicuous birds of the park the night hawk should be given a prominent place. As it flies overhead in the late afternoon and evening it is not only easily seen, but it constantly calls attention to its presence by its loud and characteristic note.

White throated swift (*Aeronautes melanoleucus*).—A few were noticed in the canyon of the lower Gardiner River on August 7. Swifts doubtless breed in the canyon of the Yellowstone, where the cliffs afford ideal nesting sites.

? Calliope hummingbird (*Stellula calliope*).—One or two humming birds were seen in the course of our trip around the park in August, but they were either females or immature birds, so that it was impracticable to identify them satisfactorily.

Kingbird (*Tyrannus tyrannus*).—Common about Fort Yellowstone and in the lower parts of the park near Gardiner.

Olive-sided flycatcher (*Nuttallornis borealis*).—Not uncommon, especially at higher elevations along the roads through the forests.

Flycatcher (*Empidonax sp?*).—On September 12 the remains of an *Empidonax* were found in the Stygian Cave, but the specimen was not in condition to be readily identified.

Horned lark (*Otocoris alpestris subsp?*).—In the open stretches in Hayden Valley horned larks were common on August 14, and they were also seen a few days later in the Lamar Valley. In the absence of specimens, however, it is practically impossible to ascertain which subspecies is represented in the park.

Black-billed magpie (*Pica pica hudsonia*).—One seen September 12 among the pines near the Stygian Cave on the " Formation " back of the Mammoth Hot Springs. Remains of the magpie were found in the caves by Doctor Mearns in 1902.

Black-headed jay (*Cyanocitta stelleri annectens*).—I did not happen to see this jay myself, but it is described by General Young and others as being a common bird in the park.

Camp robber or Rocky Mountain jay (*Perisoreus canadensis capitalis*).—One of the most conspicuous and interesting birds about the camps and stations in the park. Its inquisitiveness in search of food has earned for it the opprobrious epithet of " Camp robber," but it is deserving of a better name. Major Chittenden in his book on

The Yellowstone National Park suggests that "Camp scavenger" would more correctly describe its useful qualities. In spite of the petty depredations in which it sometimes indulges, it is worthy of the protection which it enjoys, for its tameness and its handsome plumage render it a constant object of interest to visitors.

Raven (*Corvus corax sinuatus*).—Common and in some places unusually tame. Two were seen at close range on Dot Island in Yellowstone Lake on August 13. They were attracted by the feeding of some elk kept in captivity on the island and, perched on the trees near the corral, paid little attention to the crowd of tourists.

American crow (*Corvus americanus*). Probably a common species. Several were seen near Gardiner on August 21.

Clarke nutcracker (*Nucifraga columbiana*).—Like the camp robber, the nutcracker is one of the most attractive birds, and on account of its somewhat similar colors is frequently mistaken for the former species. It may be seen almost anywhere along the tourist route, and its characteristic note, peculiar flapping flight, and gay plumage, relieved by black wings and conspicuous white secondaries and outer tail feathers, render it unmistakable after its distinguishing marks have once been noted.

Western meadowlark (*Sturnella magna neglecta*).—Probably common in the more open parts of the park, but the great stretches of forest along much of the tourist route prevent its being observed except at favorable points.

Brewer blackbird (*Euphagus cyanocephalus*).—Abundant almost everywhere about the hotels, in the grassy meadows, and near water in the open valleys. It is especially common on the lawns at Mammoth Hot Springs. In September, after many of the other birds had gone, it still lingered and was then collecting in large flocks before migrating.

Cassin purple finch (*Carpodacus cassini*).—Abundant, especially near the Mammoth Hot Springs Hotel, where numbers of young and old birds were seen in August.

Pale goldfinch (*Astragalinus tristis pallidus*).—Probably common, although only a few were seen.

Pine siskin (*Spinus pinus*).—Common. In the Upper Geyser Basin the birds were seen August 11 feeding on seeds of thistles.

Western vesper sparrow (*Pœoecetes gramineus confinis*).—A few seen on August 11 along the road between Gibbon Falls and the Gibbon lunch station.

Gambel sparrow (*Zonotrichia leucophrys gambelli*).—One of the most abundant and generally distributed birds in the park, common about all the hotels and camps and easily recognized by the conspicuous white stripes on the head.

Western chipping sparrow (*Spizella socialis arizonæ*).—Noticed especially in the vicinity of Camp Roosevelt on August 17, but probably common in many other places in the park.

Pink-sided junco (*Junco mearnsi*).—Breeds abundantly at the higher levels along the tourist route and is common nearly everywhere in the pine forests. It seems to be the species most frequently found dead in the Stygian Caves near Mammoth Hot Springs. Doctor Mearns records finding four in these caves on August 1, 1902; on September 12, 1907, we found the bodies of two in one cave and fourteen in another.

Green-tailed towhee (*Oreospiza chlorura*).—Not observed by me, but recorded by Doctor Mearns as one of the birds found dead in the caves. It is doubtless common in suitable places in the park.

Lazuli bunting (*Cyanospiza amœna*).—I am indebted to Maj. Wirt Robinson for the note of this species. The birds had left before the time of my visit, but Major Robinson found them abundant in July about the grounds of the hotel at Mammoth Hot Springs.

Western tanager (*Piranga ludoviciana*).—One of the most brightly colored birds found in this region. A glimpse of a male tanager in its gay mantle of yellow and black, perched on a limb or darting among the trees, is a sight not soon to be forgotten. Two or three of these birds were seen in the Lamar Canyon on August 17, and several were seen at other points along the route around the park.

Cliff swallow (*Petrochelidon lunifrons*).—Abundant at some points. A large colony was found breeding under the shelter of the projecting ledges of rock of the old geyser cone at Soda Butte on August 16, the young being still in the nest, but nearly fledged. A nest found on the "Formation" at Mammoth Hot Springs on August 8 was remarkable from the fact that it was placed in a vertical crevice in a rock without the usual retort-shaped outer covering of mud and apparently without the use of any mud in its construction.

White-bellied swallow (*Iridoprocne bicolor*).—Common and generally distributed.

Northern violet-green swallow (*Tachycineta thalassina lepida*).—Apparently less common than the preceding species with which it was found associated in the Yellowstone Canyon on August 14. It was probably observed also at other points, but unless the color of the back can be seen in the right light it is not always easy to distinguish the violet-green from the white-bellied swallows when the birds are flying high overhead or far out over the depths of a canyon.

Western warbling vireo (*Vireo gilvus swainsoni*).—Evidently common at Mammoth Hot Springs, where it was found in the woods back of the "Formation" on August 20 in company with nuthatches, chickadees, and several other small birds. This was one of the birds found by Doctor Mearns in the caves.

Yellow warbler (*Dendroica æstiva*).—Probably common and generally distributed. Noticed in the Lamar Valley and along the Gardiner River.

Audubon warbler (*Dendroica auduboni*).—One or two seen in the Upper Geyser Basin on August 12. Doubtless a common species, at least at certain seasons.

Macgillivray warbler (*Geothlypis tolmiei*).—Recorded by Doctor Mearns among the birds found in the Stygian caves, but I did not happen to see it or at least to identify it satisfactorily among the warblers seen at several points.

Pileolated warbler (*Wilsonia pusilla pileolata*).—A beautiful specimen of this warbler, apparently dead but a few hours, was found in the Stygian Cave on the morning of September 12. This bird was evidently a migrant which had sought shelter from the frosty air during the preceding night.

Water ouzel (*Cinclus mexicanus*).—In the clear streams and foaming cascades of the park the ouzel finds an ideal home and is probably

a common resident. It was noticed several times along the Gardiner on the road from Mammoth Hot Springs to the town of Gardiner.

Rock wren (*Salpinctes obsoletus*).—Probably common in some sections, especially in the northeastern corner of the park. It was noticed only on August 16 on the open hillsides of the Lamar Valley, adjoining the buffalo pasture near the mouth of Rose Creek.

Western house wren (*Troglodytes ædon aztecus*).—Found at Mammoth Hot Springs and at the Wylie Camp in Swan Lake Valley. Probably common at a number of other points.

Rocky Mountain creeper (*Certhia familiaris montana*).—Probably a common species, although we did not happen to see it. Doctor Mearns mentions it among the birds found in the Stygian caves.

Rocky Mountain nuthatch (*Sitta carolinensis nelsoni*).—Probably common, especially in the vicinity of the Mammoth Hot Springs.

Red-breasted nuthatch (*Sitta canadensis*).—On September 12 we found the remains of three red-breasted nuthatches in the Stygian Caves. The bird is common in this vicinity and is doubtless generally distributed throughout the park.

Mountain chickadee (*Parus gambeli*).—Abundant and readily recognized almost anywhere, as it comes familiarly about the camps and utters its characteristic note.

? Western golden-crowned kinglet (*Regulus satrapa olivaceus*).—Probably both the western golden-crowned kinglet and the ruby-crowned kinglet (*R. calendula*) are common in the park, but the birds seen near Mammoth Hot Springs on August 20 were immature and the color of the crown patch was indistinguishable.

Townsend solitaire (*Myadestes townsendii*).—One of the sweetest songsters in the park. It is probably common in many places, but we saw it only on August 7 along the Gardiner River.

Thrush (*Hylocichla sp. ?*).—Remains of two thrushes were found in the Stygian caves on September 12, but decay had progressed too far to make it possible to identify the species with certainty.

Western robin (*Merula migratoria propinqua*).—Abundant and generally distributed. We found it especially common on August 13 near the Lake Hotel, where it seemed to have bred in large numbers.

Mountain bluebird (*Sialia arctica*).—One of the most attractive and conspicuous birds. It occurs commonly about the hotels and camps, where its beautiful azure plumage can not fail to attract the attention of those who are in any way interested in bird life. Doubtless the number of bluebirds immediately about the hotels might be materially increased by putting up nesting boxes so that the birds would be encouraged to breed in greater proximity to the buildings than at present.

POACHING.

Evidence of poaching in former unfrequented portions of the park difficult of access have been found, particularly in the northwest corner, where within the last fortnight a trapper's cabin, supplied with provisions, cooking utensils, and bedding, was found. The contents were burned and the cabin destroyed. Two snowshoe cabins were found broken open and utensils carried off.

In addition to the trails shown on the map crossing the boundary lines of the park there are numerous other trails—all originally made by hunters, trappers, and prospectors. There are now four main

entrance roads leading into the park—north, east, south, and west—which seem to be sufficient for all purposes concerning the park and for accommodation of visitors. Applications have come to this office from far and near for permission to enter the park on these various trails with arms, in order to pass through the park for the purpose of hunting outside of the park. All such applications for permits to carry guns unsealed through any portion of the park have been refused, but permission to carry sealed guns has been granted to persons who enter the park at one of the regular stations where their guns may be sealed, and make exit at one of the regular stations (their route through the park being particularly specified) where their guns may be unsealed and condition reported upon. Permits to carry game or game trophies through the park have been refused. There has been much adverse criticism by hunters and guides on these rulings, but the best interests of the park demand that it shall no longer continue a thoroughfare for sportsmen, hunters, and game-slaughterers.

TRIALS BEFORE UNITED STATES COMMISSIONER.

Two poachers were convicted and sentenced to three months confinement and costs, which latter amounted to about $1,000. One woman plead guilty through the telephone to writing her name on the hot water formation and was fined $10.50, including costs. A driver for the Yellowstone Park Transportation Company charged with violation of paragraph 4, Rules and Regulations, was convicted and fined $35.90, including costs.

Three United States soldiers, members of the park guard on stations, were brought before the commisisoner. One sergeant in charge of a station plead guilty for violation of paragraph 5, Rules and Regulations, and was fined $100 and costs. The case of one for disorderly conduct was dismissed for lack of evidence. Sergeant in charge of a station charged with violation of paragraph 2, Rules and Regulations, was acquitted on the grounds that he had only conformed to the custom of previous years and that he had been duly authorized by his commanding officer to graze his horses.

GAME PROTECTION.

It seems a difficult problem to protect the game with the few scouts allowed to be employed. The two additional scouts authorized for temporary service make a material difference, but as it is, one or two soldiers are detailed to go with each scout into the regions difficult of access, and this severe and dangerous work in the very cold weather is an imposition on men with such meager pay, yet when these men take interest and do good work they certainly should receive some extra compensation. During the seven months of winter when this duty compels them to undergo such severe hardships, $13 per month with food and clothing is meagre wages "now-a-days."

RECOMMENDATIONS.

Under the present plan of governing and protecting the park by a detail of troops from the Army—the commander of said troops performing the duties of superintendent of the park up to the present season—there have always been two interests to subserve. These

interests still obtain under the present plan of a superintendent not in command of the troops.

These two interests are the interests of the park and the interests of the military service (discipline, training, etc.). Such details are injurious to the Army in that regimental and squadron organizations are not only disturbed, but the troop organization is largely demoralized by subdividing the men into small parties far separated for indefinite periods of time without the personal supervision of an officer.

The enlisted men of the Army are not selected with special reference to the duties to be performed in police patrolling, guarding, and maintaining the natural curiosities and interesting "formations" from injury by the curious, the thoughtless, and the careless people who compose a large percentage of the annual visitors in the park, and in protecting against the killing or frightening of the game and against forest fires. It is quite obvious that any man assigned to duty in any capacity in the park should possess special qualifications for the proper discharge of that duty, and he should be by natural inclination interested in the park and its purposes. In addition, every man should be an experienced woodsman, a speedy traveler on skis, an expert trailer, a good packer who with his horse and pack animal could carry supplies to subsist himself for a month alone in the mountains and forests, and besides he should be of a cool temperament, fearless, and independent character, and handy with his rifle and pistol to enable him to find and overcome the wily trapper and the ugly large game head and teeth hunter. He should be well informed in the history of the park and thoroughly cognizant with all the curiosities and points of interest therein; he should also be qualified to pass a reasonable examination in zoology and ornithology. A visiting tourist should always be favored by an intelligent and courteous answer on any subject pertaining to the park from any guard interrogated. Inattention or discourtesy should subject the guard to proper discipline or dismissal from the park when in the judgment of the superintendent the discipline of the park service would thereby be promoted. Divided responsibility and accountability as to police control and management seldom produce the best results and should no longer obtain in the Yellowstone Park. Under existing conditions the superintendent is answerable to the Secretary of the Interior, while at the same time the troops acting as park guard are held to accountability and discipline as is contemplated and provided for in the United States Army.

The pay of enlisted men in the Army is too meager to attract capable men who can fill these requirements, and the duties are too onerous for the remuneration. It requires a year for new troops arriving in the park to become familiar with all the duties required of them, and during that year many of the enlistments expire and the vacancies are filled by raw recruits. At the expiration of three years, or at most four years, these troops are ordered elsewhere and new troops take their place. The proper and necessary military instruction and training can not be carried on and thorough discipline can not be maintained. The troopers can not be examined and made subject to such tests of efficiency as good service in the park requires.

Civil guards, on the contrary, would be selected by examination with reference to their special fitness, their interest in the work, and

their capacity to perform it; they would at the same time be subject to appropriate tests for efficient park service and subject to dismissal on failure to meet such tests. By continuous service efficient civil guards would soon become thoroughly familiar with the park, its topography, roads, byroads, pack trails, game trails, game habitats of winter and summer, and likewise with the haunts and methods of the poachers who are constantly seeking profit by invading the park to shoot game for heads and teeth and to trap for furs. The troops assigned from time to time for guard duty in the park can scarcely all become familiar with its topography and trails ere a just regard for the proper maintenance of organization and discipline and a fair division of duties, foreign and domestic, require their withdrawal. And so continuity of service can not be had from the Army, except at intolerable expense to army organizations and discipline.

Men whose continued employment is guaranteed during good behavior and efficient work would render the task of developing as near as possible a perfect system of protection and control reasonably easy, and the service would be more efficient and very much less expensive to the Government.

In organizing a civil guard it might be necessary to select men of good repute on trial, subject to examination during the first year—but every member taken on should in due time be examined. All vacancies occurring after complete organization should be filled by men between the ages of 21 and 45 who upon examination are found best qualified for the work. The penalty for inefficiency, incivility, dishonesty, habitual and inordinate use of intoxicants, neglect of duty, gross immorality or disorderly behavior, and such like disabilities or inabilities, should be dismissal.

Two years' experience in governing the park with troops and comparing the results of enforcing due observance of all rules, regulations, and instructions through the troops, and through the few scouts that in reality are civil guards, leaves no doubt in my mind about the superiority of a trained and well-governed civil guard for this particular and difficult duty. While I found some excellent, intelligent, and conscientious noncommissioned officers and privates who have taken interest in carrying out their instructions in park duties, the majority are indifferent and appear to resent being required to subserve both the military interest and the interest of the park, on their small pay. During the long and severe winters the duty is not only difficult but dangerous, and much hardship must be endured in its performance.

The protection of the park and protection of the game should be under one head. The War Department should have entire control, or the troops withdrawn and a civil guard substituted, and the entire control and responsibility vested with the Interior Department.

Very respectfully,

S. B. M. Young,
Superintendent.

The Secretary of the Interior.